Overview of the OSSE Testbed

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Abstract

The primary objective of the OSSE Testbed is to establish a numerical test bed that would enable a hierarchy of experiments to: (1) determine the potential impact of proposed space-based, sub-orbital, and in situ observing systems on analyses and forecasts, (2) evaluate trade-offs in observing system design, and (3) assess proposed methodology for assimilating new observations in coordination with the Joint Center for Satellite Data Assimilation (JCSDA). Sub-objectives are to define both the advantages and limitations of a hierarchy of OSSEs that includes rapid prototyping of instrument or data assimilation concepts, as well as the more rigorous "full" OSSEs, and to generate an OSSE/OSE process that invites participation by the broad community of agency planners, research scientists and operational centers. Substantial progress has been made on nearly all of the objectives for the OSSE Testbed. Specifically, The OSSE Testbed: 1) Provided expertise on OSSEs to NOAA, partners and academia. 2) Generated and validated regional OSSE nature runs 1km resolution. This validation required an exhaustive number of iterations of the WRF model embedded within an ECMWF global nature run and confirmed the validity (strongpoints and weaknesses) of the 1km nature run over a 13 day period. Twelve initial hurricane predictability experiments using this system were conducted. (AOML and RSMAS). 3) Completed the first phase of a global OSSE for UAS and completed a report and one refereed article from this OSSE. 4) Completed the first phase of a global OSSE for WISDOM balloons. 5) Conducted a global OSSE for DOD to evaluate alternatives for the DWSS early morning orbit. 6) Began OSSEs to evaluate alternatives for space-based lidar winds for NASA. 7) Began OSSEs to evaluate advanced hyperspectral sounders. 8) Lead development of the first ever rigorously validated ocean OSSE system anywhere in the world. Initial ocean OSEs and OSSEs relating to hurricane prediction were performed.